



ENERGY and OCEAN HEALTH

There is growing agreement that human activities are contributing to and accelerating global climate change which in turn, will impact the health of the ocean that is vital to our quality of life, and ultimately, our survival.

(http://www.climateinterpreter.org/sites/default/files/resources/NOAA%20ONMS%20climate_literacy.pdf)

We are becoming more aware of how the production of energy and its uses are directly connected to climate change and therefore, to the health of the ocean. Scientific studies are showing us that increased burning of fossil fuels for energy causes an increase of atmospheric greenhouse gasses such as carbon dioxide. This increase of greenhouse gasses causes changes in the ocean in a variety of ways including: melting of ice sheets and glaciers, sea level rise, seawater contamination of fresh water, and ocean acidification (the changing of chemistry of ocean water by absorption of carbon dioxide from the atmosphere). In turn, these changes impact ocean species, ocean ecosystems, and marine food webs.

As the Ocean Guardian School program works to support school projects that help to protect the health of watersheds and ocean, there is a clear need to expand the program pathways to include ocean stewardship projects that address energy production and use.

To this end, we have added **ENERGY and OCEAN HEALTH** to the list of project pathways in the Ocean Guardian School program. In this pathway, schools can propose hands-on projects that connect **energy production and/or use to the health of the ocean**. Project examples may include, but are not limited to:

Reducing energy use/carbon footprint at school and/or home

Possible project elements: School energy audits/carbon footprint calculations resulting in energy saving plans (i.e., "power down" campaign, "no idling" campaign, bike to school days, light bulb/computer energy saving plans, etc.)

Clean energy alternatives (i.e., wind/solar projects)

Water savings projects

Tree plantings (trees absorb CO₂ and they provide shade that keeps streets and homes cooler)

Energy Pathway RESOURCES:

With the growing awareness of how the ocean's health is related to climate change and energy use, it is more important than ever for students to become **climate and energy literate** as they are guided by the Ocean Literacy Principles in their Ocean Guardian School efforts.

Listed below are some websites that offer a variety of information, curriculum, current data, project ideas, etc. that are related to climate change and energy education.

Climate Literacy: The Essential Principles of Climate Sciences

http://oceanservice.noaa.gov/education/literacy/climate_literacy.pdf

EPA: A Student's Guide to Global Climate Change

<http://www.epa.gov/climatechange/students/index.html>

Energy Literacy: Essential Principles and
Fundamental Concepts for Energy Education

http://www1.eere.energy.gov/education/pdfs/energy_literacy_2.0_low_res.pdf

NOAA Activity Book: Ten Activities to Introduce You to the Essential Principles of Climate Science

<http://oceanservice.noaa.gov/education/discoverclimate/>

NOAA's Office of National Marine Sanctuaries: Climate Literacy
Concepts, Talking Points, and Case Studies

[http://www.climateinterpreter.org/sites/default/files/resources/NOAA%20ONMS%20climate_literacy.p
df](http://www.climateinterpreter.org/sites/default/files/resources/NOAA%20ONMS%20climate_literacy.pdf)

NOAA Ocean Service Education: Climate Resources

<http://oceanservice.noaa.gov/education/pd/climate/>

Climate Literacy and Energy Awareness Network

<http://cleanet.org/index.html>

NASA Precipitation Education

<http://pmm.nasa.gov/education/>

Environmental Protection Agency Climate Change

<http://www.epa.gov/climatechange/>

EPA: FAQ about Global Warming and Climate Change

http://www.epa.gov/climatechange/Downloads/wycd/Climate_Basics.pdf

Alliance for Climate Education

<http://www.acespace.org/blog/2011/08/the-basic-recipe-for-climate-change/>

National Wildlife Federation Climate Change Pathway Eco-Schools USA

<http://www.nwf.org/Eco-Schools-USA.aspx>

Climate Literacy, Energy Awareness Network (CLEAN)

<http://cleanet.org/index.html>

Climate Change Live

<http://www.climatechangelive.org/>